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PARTIAL TIME TRADE SCHOOLS

BY PROFESSOR HERMAN SCHNEIDER,
Dean, College of Engineering, University of Cincinnati, Cincinnati, Ohio.

It is a curious fact that nearly all the trade schools have been planned for young men who desire to become machinists, wood workers, molders, bricklayers and carpenters. There is an occasional plumbers' school, and here and there a garment-workers' school. An examination of the industrial directory in the back of any city telephone book will show that there are dozens of trades just as important as the ones mentioned. It seems that no measures are being taken to operate trade schools for young men of these various trades, and indeed when the size of the problem is considered, it becomes very evident that for industrial training generally, the trade school as it is organized at present, is out of the question.

If the school children in this country under eighteen years of age, were placed in a straight line, allowing one foot of space for each child, the line would stretch from the upper end of Maine across the continent to the lower end of California. If those leaving school at or about the age of fourteen,—nearly all of them to become breadwinners,—were taken from the line, only that portion extending across the State of California would remain. In industrial centers,—and this will comprise the major portion of the Eastern states and most of the cities of the country—these children are drawn into the manufacturing and business life of the community. It is manifestly impossible to organize a system of trade schools which will take even a small number of these children, and give them in the shops of the schools the trades they seek to follow. Furthermore, since the trade school is non-productive, it would have to be supported by private endowment entirely, or a tuition fee would have to be charged. The further fact that these children leave school because of financial necessity, indicates that a very small proportion could continue in a school without some remuneration. The problem, therefore, is not to establish schools in which a few trades are taught by professional educators to a very small number

of select students, but to devise means whereby those children, who by force of necessity are compelled to go to work at an early age, may obtain further instruction, which will make them more efficient and better citizens.

Education, generally speaking, should aim to do the greatest good to the greatest number. The first object of all education is to make better citizens, and the first duty of a good citizen is to be self-supporting. The second duty is to be a good citizen in the civic sense. Consequently, for this large number, educational plans should tend to increase the industrial efficiency of the youth who has already secured a position and is working at it. It should give him such training as will insure upon his part the proper performance of his duties as a citizen of a republic.

To show more clearly the situation confronting the educator, the following figures may be cited: In the city of Cincinnati, of 8,567 pupils entering the schools in the first grade, 447 are left at the tenth grade, when the children reach the age at which the law permits them to withdraw from the school. The majority of these children enter the industrial life of the city, and thereafter they obtain no further instruction of any sort whatever, except what may be given in the night schools. They receive no instruction in industrial efficiency, and very little in good citizenship.

It is unquestionably impossible to organize under private direction a school which would deal with the education of this number of industrial workers. Investigation, however, discloses the fact that if a partial time school were arranged, a great many children could attend for part of the time if they were earning something the other part; and further, that parents would make sacrifices if the children were taught in the partial time school such subjects as would make them more highly efficient in their work, and thereby increase their earning capacities at their trades. It is evident that there is but one organized institution which can meet this situation, and that is the public school system.

The logical solution, therefore, is a broad plan of co-operation between the public schools and the industries. How such a scheme may be planned, may perhaps be best exemplified by the working of the co-operative courses in engineering now in operation at the University of Cincinnati.

These courses are so devised that students taking them work

alternate weeks in the engineering college of the university and at the manufacturing shops of the city. The classes are divided into two sections which alternate with each other, so that when one section is at the university the other is at the shop. The length of the course is six years. During the summer, students work full time at the shops, but are given several weeks' vacation; there is also a week's vacation at Christmas. The practical work at the shops is as carefully planned as the theoretical work at the university, and in all cases the students follow, as nearly as possible, the path of the machines manufactured from the raw material to the finished product sold. For instance, a student in electrical engineering spends his first year in the foundry; the next year and a half in the machine shop; the next two years in the commutator, controller, winding, erecting and testing departments; and the subsequent time in the drafting-room and sales offices. A contract is signed by the student, the university and the firm. This contract has a blank space to be filled out with the shop work the student is to receive during the six years of the course. In all cases the dean of the engineering college and the professor of electrical, mechanical or chemical engineering, as the case may be, confer with the manufacturers in planning this course of shop work, so that the students get a logically and carefully arranged shop and business training.

They are paid for this shop work on a scale of wages which begins at ten cents per hour and increases at the rate of one cent per hour every six months, making the total earnings of the course about \$1,800. Applicants for places in this course are required to enter the shops during the summer preceding their entrance to college.

The first year the course was put in operation about sixty young men came to the university to inquire concerning it. Of these, forty-five went into the shops, and when the university opened in the fall twenty-eight were left. The second year there were 800 inquiries and applications; from these, sixty were selected and sent into the shops, and when the college opened in September forty-four were recommended to us and started their university work. This year the applications and inquiries approximate two thousand.

It will be evident that this plan applied to trade education would be simply a return to the old apprentice system with something more attached, namely, definite mental instruction under trained teachers,

aiming toward industrial efficiency and good citizenship. It will be recalled that under the old apprentice system instruction was really a part of the student's training, this instruction being imparted, however, by the older men of the shop. Under present industrial conditions, this seems to be entirely out of the question. The plan, it will be noted, does not contemplate that students shall be placed in the shops by the school, but after a boy of fourteen or fifteen has obtained a position, he can, if he so desires, attend the school and receive theoretical instruction in his particular trade.

A plan similar to the above has already been started at Fitchburg, Mass. The apprentices are divided into two sections which alternate with each other, as in the engineering college of the University of Cincinnati; in this way the shops are always fully manned, and the school has always the same quota of students. The school does not attempt to teach anything concerning the practical side of the work. It aims, however, to teach the theory underlying the work, to teach the intent of the work, to give such training in mathematics and elementary sciences as will enable the apprentice to become more highly efficient, and to give such cultural subjects as will tend to make him a more intelligent civic unit. In other words, the course has in mind both the thing the apprentice is to do and the man he is to be.

It is, of course, not intended to take children from the high schools who can afford and intend to take a regular classical, scientific or commercial high school course. These courses will go on as heretofore. The plan is simply a means of aiding the greater number of children to obtain additional schooling, and of enabling them at the same time to earn enough money to pay for their simple wants.

There should certainly be no reasonable objection to this additional field of usefulness on the part of the public schools, inasmuch as the cost would be very slight and the added service of the schools to the taxpayers very appreciable. The absolute necessity for some broad, comprehensive, co-operative and thorough system whereby our industrial workers may obtain a much higher efficiency than they can get under present conditions is evident from the following facts:

The standard of living of the American workman is the highest in the world. To meet this standard he must have a much better

wage than his competitor in Europe or Japan. The efficiency of the German workman, due to continuation schools, etc., has increased to such an extent that German investigators of the United States feel warranted in considering American competition negligible. Commenting on the report of these investigators, Consul-General Mason, of Berlin, says:

Reduced to simplest terms, these investigators generally conclude that the reliance on a general and more or less superficial education, together with natural adaptability, to fit young men for almost every walk in life, and the lack of specialized study in physical science, modern languages, and the industrial arts, will, if persisted in, neutralize much of the advantage which our country enjoys through natural resources and advantageous geographical position for the South American, Mexican and Asiatic trade. They note also the enormous disparity between American and European wages, the high rates charged by express companies, and the general heavy cost of handling business in the United States, and conclude that, on the whole, the "American Danger" has been greatly exaggerated, and that a steadfast adherence by Germany to the educational system and commercial methods now in practice will leave the Fatherland little to fear in future competition with American manufactured goods. . . .

Realizing that the future prosperity of German manufacturers will depend, as now, largely on their export trade, German workmen of the better class have come to the conclusion that their best interest is to be as efficient and productive as possible. There is a new and pervading ambition to beat the foreigner wherever possible at his own game and with his own tools. When it is remembered that this highly educated, efficient and ambitious labor costs the employer only from one-third to one-half the wages that are paid in the United States and that it is comparatively tractable and easily managed, it will be seen that a situation is being developed here which our countrymen will do well to take into account.

The German workman is satisfied to work a longer period of time per day than the American workman. At the same time, it is generally conceded by American manufacturers that we are coming to a shorter working day. They also state that the efficiency of the American workman has decreased within the last ten years.

That the American manufacturer is rapidly losing ground is indicated by the following from "The Industrial Improvement Schools of Germany," by A. A. Snowden:

Take this illustration as one of many—the single item of machinery and tools. Germany's sales to the United States have doubled in the five years from 1900 to 1905. Meanwhile, American sales to Germany, in this line, are

now about one-third of the totals of five years ago. For the same period, Germany now sends to England twice as much finished products, receiving only two-thirds of the former imports. To Sweden, Denmark, Argentine and Chile, Germany now sends double the quantity of machinery and tools exported five years ago, while to China it sends five times the former amount, and to Canada four and to Portugal three times the quantity sold in 1900. In the case of all the other countries, there has been a gradual increase of trade. . . .

The new (Wuerttemberg) law—to be in full operation in 1909—compels all localities (Gemeinden) having for a period of three successive years at least forty youths under eighteen years of age engaged in industrial or commercial pursuits, to establish an industrial or commercial school, and to maintain it as long as the number of such youths employed does not fall below thirty for three years in succession. The term "commercial or industrial pursuits" is given the widest possible scope in Wuerttemberg, and takes into account not only the factory hand and the counting-house assistant, but the day laborer, the grocer's clerk, and the errand boy. The law provides for the compulsory attendance of all young workmen (a stipulation formerly left to the localities to decide, in virtue of imperial laws based on a North German ordinance of 1869). The chief objective point of the law is to furnish opportunity for instruction during the work-day,—instead of evenings, Sundays or holidays, as before. The minimum number of hours per year is to be two hundred and eighty. The schools are to be organized more strictly than ever along vocational lines, and instructors specially prepared through long courses of training are to be put in charge everywhere. The courses will extend over a term of three years, instead of two, as formerly.

These few facts demonstrate that unless a thorough system of industrial education, involving the co-operation of the school authorities and the manufacturers, is inaugurated, it will not be a question ten years from now whether we shall have an eight-hour day or not, but whether there will be any work at all for our industrial army.